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Conference Abstract

Building semantics in the domain of trait data: an OBO Library approach

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Abstract

As the volume and diversity of digitised trait data grows with ever-increasing speed, there is a clear need to capture the knowledge which contextualises it. Many researchers are addressing similar challenges by using ontology-based approaches to represent knowledge and use it to better structure data across resources, however, there is immense variation in how and for what purpose these ontologies are built. While some approaches emphasise quick and lightweight deployment for specific projects, others spend considerable effort in creating "heavy duty", finely specified semantics for a wide user base. Effectively ontologising trait data collections is likely to require a hybrid of these strategies and must also consider how to meld emerging efforts with those that have matured into well-adopted, production-oriented systems. This contribution will provide an overview of existng ontologies linked to traits, as well as the best practices used to create and develop them within the Open Biological and Biomedical Ontologies (OBO) Foundry and Library (Smith et al. 2007). Specifically, it will outline a collaborative model for future, open development, based on the domain semantics of the Ontology of Biological Attributes (OBA), the Environment Ontology (ENVO; Buttigieg et al. 2013, Buttigieg et al. 2016b), the Population and Community Ontology (PCO; Walls et al. 2014), and recent work on bridging phenotypes and environments (e.g. Thessen et al. 2015). Finally, perspectives on linking trait semantics, and hence trait data, to societal goals via OBO-aligned efforts to represent the semantics of the United Nations' Sustainable Development Agenda for 2030 (e.g.

Buttigieg et al. 2016a) will be offered as a means to bridge scientific data with global socio-ecological goals.

Keywords

ontology; semantics; trait; environment; phenotype; OBO; interoperation; ecology

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Author contributions

PLB primarily develops the Environment Ontology and, in this contribution, summarises a few of the trait-relevant ontology engineering efforts within the framework of the OBO Foundry and Library

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